Calibre FOVEA-F1

MEMC Frame Rate Converter

The Calibre FOVEA-F1 provides an advanced, powerful MEMC (Motion Estimation Motion Compensated) alternative to the linear frame rate conversion capability of Imagine Communications' respected Selenio X50™ and Selenio X100™ 1RU processing platforms. The FOVEA-F1 extends the company's facility signal processing portfolio into global high-quality content conversion for applications including live sports, worldwide event broadcasts and post production.

The content-adaptive, broadcast-grade HD FOVEA-F1 can handle live, recorded/archived or computer-generated content via its graphics-to-video scan converter and frame synchronizer, and provides powerful MEMC frame rate conversion, noise reduction, image enhancement/restoration and aspect ratio conversion. The FOVEA-F1 uses a specialist custom video processor architecture to achieve excellent picture performance at an extremely competitive price point — including dedicated MEMC motion processing with an exceptionally large 16-field aperture for optimal motion detection, even with difficult long cadences and mixed video and film content.

Product Features

- Motion Estimation Motion Compensated (MEMC) Frame Rate Conversion
- Unrivaled price-performance ratio
- High-performance, content-adaptive MEMC
- Combined phase plane correlation, block matching and global motion estimation
- Video and film processing with cadence preserve/remove/adjust
- Wide range of MEMC presets for easy use with most common content
- Advanced MEMC controls for expert users
- Converts between all common broadcast and film frame rates; also inputs computer graphics
- Aspect ratio conversion and pan/zoom/tilt/trim, logo insertion and safe area markers
- MEMC keep-out zone definition and MEMC demo mode
- Closed caption support, HD CEA708 and SD CEA608 formats
- VITC/LTC embedded timecode support with automatic conversion to/from drop-frame time code

- Frame synchronizer, genlock to digital or analog house sync, audio embed and de-Embed, audio delay correction
- Inputs: 3G-SDI, YPbPr, DVI, HDMI, composite, S-Video and RGBHV/VGA
- Outputs: 3G-SDI, YPbPr, DVI/HDMI
- Flexible proc-amp controls, 2D detail enhancement, sharpness control, real-time unsharp mask
- Broadcast grade motion adaptive de-Interlacer with 3:2, 2:2 and non-standard/variable cadence detection
- Per-pixel motion-adaptive temporal/film noise filtering HD and SD, MPEG-2 codec noise reduction for SD
- System control via a front-panel LCD menu; rugged front-panel keys with inbuilt status indication
- Web server remote control via TCP/IP, integrate with third-party control systems via TCP/IP or RS-232 using API
- Dual-redundant power supply for provision of two power feeds in live on-air applications

Product Details

Superb scaling with 1024-tap filters, 4-field per-pixel motion adaptive de-interlacing, outstanding per-pixel motion adaptive noise reduction and image enhancement techniques not only improve HD sources but also make SD near-HD quality.

Support for Closed Caption is provided, including conversion between HD CEA708 and SD CEA608 formats. VITC Embedded Timecode is also supported and includes automatic delay correction and automatic conversion to/from drop-frame timecode.

Scan conversion mode can also be used to normalize computer scan rates to video scan rates with motion-compensated conversion.

Proc-amp controls include luma gain/contrast, luma cutoff/black level, saturation, hue, R-Y, B-Y gains and cut-offs. Y, R-Y and B-Y adjustments have 10-bit granularity.

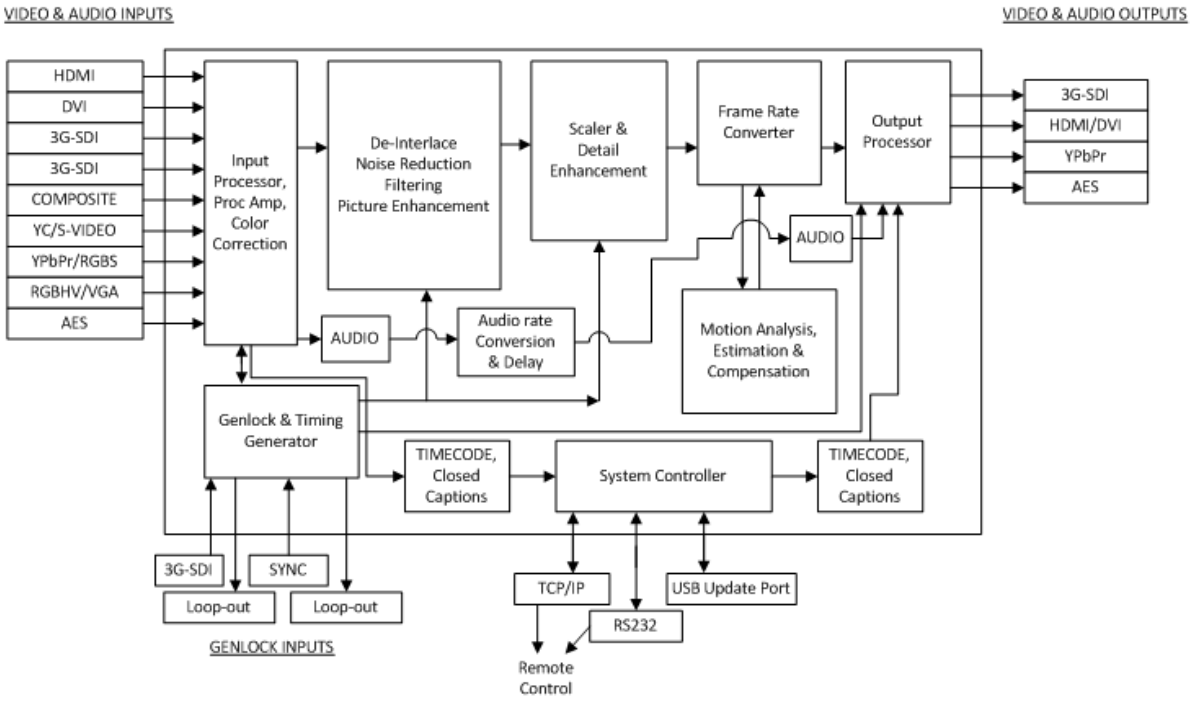
Trim, Pan and Tilt functions enable display of a particular area with custom aspect ratio control. Pre-defined aspect ratio conversion functionality includes a progressive stretch for pseudo 16:9 from 4:3 source material.

Genlock to 3G-SDI, HD-SDI, SD-SDI, tri-level or bi-level sync or black and burst is also provided.

Audio connectivity is standard, with support for 8 channels (4 pairs) of digital AES 48 KHz audio via BNCs. Embedded audio via 3G-SDI, HD-SDI and SD-SDI is provided as standard, with support for audio embed and de-embed. Audio delay is automatically corrected for video processing delays. Further delay can be added or video can be further delayed to advance audio.

The FOVEA-F1 also features an Output Error Conceal function that conceals MEMC errors which would impact transmission codec performance. The function automatically switches to linear processing for the affected field or area of content on scenes where errors are automatically detected by the FRC algorithm.

Images/Diagrams



Specifications

Specifications and designs are subject to change without notice

Genlock	2x Dedicated genlock inputs 1x 3G-SDI (HD/SD compatible) with active loop-through 1x Analog tri-level or bi-level sync or black and burst
Inputs	2x 3G-SDI with automatic cable EQ, (HD-SDI and SD-SDI compatible) with embedded audio capability for 3G, HD and SD 1x HDMI with audio and deep color, HDCP compatible 1x DVI-D, HDCP compatible 1x VGA analog graphics via 5 BNCs supports RGBHV and RGsB 2x Composite video via BNC (NTSC/PAL/SECAM) 1x S-Video via 2x BNC (NTSC/PAL/SECAM) 1x Component video YPbPr via BNCs 4x AES 48 KHz digital audio pairs via BNCs
Outputs	1x 3G-SDI (HD-SDI/SD-SDI compatible) with embedded audio for 3G, HD and SD 1x DVI-D, HDCP compatible, HDMI deep color capable, dual-function output automatically switches between DVI or HDMI depending on device connected to output 1x Component Analog YPbPr 4x AES 48 KHz digital audio pairs via BNCs
NB: For non-HDCP input signals all outputs can be used simultaneously but if the input signal is HDCP encrypted then only the DVI/HDMI output is available due to HDCP licensing rules.	
Closed Caption and Timecode Support	
Composite, S-Video and YPbPr inputs	CC and VITC for SD only
YPbPr Output	CC support only
3G/HD/SD-SDI Inputs and Output	CC and VITC/LTC support, HD and SD
Video Input and Output Formats	
Input and Output	480i, 576i, 720p50/59.94/60, 1080i50/59.94/60, 1080p23.97/24/25/30/50/59.94/60, 1080sfp23.97/24/25
Input Only	2Kp23.97/24/25/30/50/59.94/60
NB: Noise reduction and unsharp mask are available for SMPTE video formats only except for 1080/2Kp50/59.94/60 and not computer modes. Some functionality only applicable to interlaced signals.	
Computer Graphics Input Formats	640x480, 800x600, 852x480, 853x480, 1024x600, 1024x768, 1280x720, 1280x768, 1280x800, 1360x768, 1365x768, 1366x768, 1368x768, 1400x768, 1440x900, 1600x900, 1366x1024, 1400x1050, 1680x1050, 1600x1200, 1920x1080, 1920x1200, 2048x1080
Control Ports	Front panel controls with character LCD display and lockable keypad 4 user configurable presets Web server for remote control via TCP/IP API-based remote control via RS-232 serial port or TCP/IP USB port for firmware update
Signal Paths	10-bit 3G/HD/SD-SDI, 10-bit ADCs for composite, S-Video 12-bit ADCs for component and VGA video 8/10/12-bit HDMI, 8-bit DVI support All video buses are 10-bit, internal processing up to 16-bit as required by each process.
Modes of Operation	MEMC standards conversions with image enhancement processing and filtering Motion adaptive mode for format conversion without frame rate conversion Low latency mode with reduced processing for frame sync only use
MEMC Preset Modes	Documentary, general sport, skiing/winter sports, football/soccer, grand prix/motorsport, general/mid, drama, talk and game show, music and commercial

Power	Dual redundant integral PSUs, 100 to 240 VAC 50/60 Hz, power via 2x IEC connectors Can run on one or both PSUs Fan cooled for installation into equipment racks Separate PSU cooling for high reliability Front standby/on control key with switch-off time delay to avoid accidental shutdown
Mounting Information	Extremely rugged, professional 19” (2U) rack case All connectivity via industry standard connectors, no requirement for breakout cables

Ordering Information

FOVEA-F1	2RU motion estimated motion compensated frame rate converter, dual power supplies, built-in web UI